

## Position Description

**Labor Category/FLSA:** E

☐ **Current** ☐ **Proposed Specific Description**

**Date Prepared:** 06/26/03

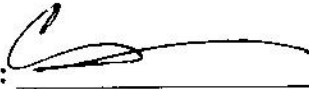
**Approving**

**Official:**

**Name:** Connie Williams

**Title:** HR Specialist

**Signature:**




**Standards Used:** Mechanical Engineer, GS-830, TS-28, dated June 1977

**Position/Title/Series/Grade:** Mechanical Engineer, GS-830-13

The proposed title, series and grade for this position is Mechanical Engineer, GS-830-13. The subject position serves as the senior engineer in a wide range of mechanical engineering systems such as heating and refrigeration, utility, plumbing, sprinkler, and other related building systems. These systems are found in the various buildings housed on the NIH main campus and its satellite facilities such as laboratories, a hospital, animal facilities, maintenance, office complexes, etc. These duties are consistent with those outlined in the title and series section of the mechanical engineering classification standard. Therefore, this position is titled Mechanical Engineer, GS-830.

**Grading of Positions:** Two types of work are specifically covered in the standard. Professional design, construction and other work which is accomplished primarily by application of, modification of, adaptation of, or compromise with standard guides, precedents, methods and techniques **and** professional work which involves staff assignments as technical consultants and advisers and/or program coordinator-reviewers in engineering organizations engaged in or concerned with the preceding type of work. The position is evaluated using a factor-by-factor basis and the factor level descriptions outlined in the benchmarks.

## FACTOR EVALUATION SYSTEM (FES)

<b>Title/Series/Grade</b> Mechanical Engineer, GS-830-13			<b>Position Number</b> 	
<b>Organization</b> Office of Research Services, Division of Engineering Services				
Evaluation Factors	Factor Level	Points Assigned	Standard(s) Used	Comments
1. Knowledge Required by the Position	1-8	1550	Mechanical Engineering, GS-830, TS-28, dated June 1977	
2. Supervisory Controls	2-4	450		
3. Guidelines	3-4	450		
4. Complexity	4-5	325		
5. Scope and Effect	5-5	325		
6. Personal Contacts	6-3	60		
7. Purpose of Contacts	7-3	120		
8. Physical Demands	8-1	5		
9. Work Environment	9-1	5		
<b>TOTAL POINTS</b>	3290		<b>REMARKS</b>	
<b>GRADE CONVERSION</b>	GS-13		 <b>SPECIALIST:</b> Connie F. Williams  <b>DATE:</b> June 26, 2003	

## I. INTRODUCTION

This position is located in the Office of Research Facilities Development and Operations (ORFDO), Office of the Director (OD), National Institutes of Health (NIH), Department of Health and Human Services. The ORFDO employs a staff of approximately 602, including professional, scientific, administrative, technical, trades, and support positions. The ORFDO is primarily responsible for planning and directing services that provide master planning; capital facility project management; real property management, including architecture and engineering, maintenance, space and facility management; and, the acquisition of architecture and engineering services, leasing, construction, and facility maintenance and operations related services. In addition to its main campus covering over 300 acres in Bethesda, Maryland, NIH has research facilities throughout Montgomery County, MD; in Baltimore and Frederick, MD; in Research Triangle Park, NC; and, in Hamilton, MT. The types of facilities used by NIH are diverse and consist predominantly of special purpose space such as hospitals, multi-disciplinary clinics and biomedical research laboratories, and facilities that house computers, animals, unique testing devices, as well as general office and support space.

The Construction Management Branch (CMB), Division of Property Management (DPM), ORFDO provides architectural, engineering and construction management services required for planning, designing, constructing, altering, renovating, improving and repairing NIH facilities, through in-house resources or contracts with A/E and construction firms. In addition, the CMB is responsible for monitoring and reporting progress of projects under its purview against approved programs of requirements, budgets, and schedules. Other related functions of the Branch include managing projects under its purview to successful completion by implementing project controls and risk management strategies to minimize variance from approved programs of requirements, budgets, and schedules.

## II. MAJOR DUTIES AND RESPONSIBILITIES

The incumbent serves as Mechanical Engineer for the Construction Management Branch (CMB), DPM. The incumbent is responsible for all aspects of planning, coordinating, and developing budget estimates for a wide range of mechanical engineering activities at NIH. The employee's expertise covers building heating and refrigeration systems, water treatment systems, plumbing systems, biohazard waste treatment systems, sprinkler systems and other related building systems. These systems are provided for large multi-million dollar medical research laboratory buildings, animal buildings, hospital facilities, and support buildings such as computer complexes, office buildings, shops, and warehouses. Activities include planning, developing alternatives, budgeting and analysis. Projects typically involve hazardous facilities requiring special expertise to provide systems to contain the hazard.

- Contact IC customers to develop detail understanding of the customer requirements.
- Survey existing site conditions to determine space problems and system needs
- Confer with facilities management personnel regarding the project requirements
- Prepare project plan alternatives, and associates budgetary cost estimates for presentation to the IC customers. Provide narrative explaining Pro's and Con's of each presented alternative
- Review A/E and construction contractor's schedule on complex projects and evaluate their completeness and constructability.
- Provide technical reviews for renovation and construction projects funded by the NIH Extramural Facilities Grant Program.
- Furnish expert technical advice to other staff as directed.

### **Factor 1 - Knowledge Required**

Furnishes advice to team members in other disciplines as well as to other CMB engineers. Incumbent processes the technical ability to analyze studies and cost estimates made by A/E firms; prepare technical reports and papers on important and highly complex engineering matters which influence current and future programs at NIH; and serve as a mechanical engineering expert on panel discussions held regarding controversial issues in connection with major projects. Incumbent consults with other government agencies and private firms to coordinate policies and design approach to novel problems. Incumbent provides peer review of the work of other mechanical design professionals and ensures that code requirements are met.

Coordinates with NIH environmental engineers, industrial hygienists, and safety specialists to ensure that all environmental and safety interests are considered; consulting with research personnel and other advisory groups such as the Environmental Safety Branch (ESB) and the Occupational Safety and Health Branch (OSHB).

Ensures that the project plans meet the needs of the NIH. Strict adherence by the incumbent to the requirements of the CMB Quality System Manual (QSM) is essential. Incumbent must perform all work in compliance with the CMB QSM strictly following its policies, procedures, and requirements concerning procedural documentation and internal and external audits.

Exhibits mastery of advanced concepts, principles, and practices of professional mechanical engineering so as to enable the incumbent to serve as an expert in a wide range of engineering activities for NIH and its field stations. (Required for all mechanical engineering applications listed in Major Duties and Responsibilities, page 1 above.)

Conceptualizes and formulates projects by surveying existing site conditions to correctly assess space requirements and properly coordinate these requirements with the building systems through applying sound engineering practices. When renovating existing space, coordinates the elements of program need and time urgency with the constraints of space,

service, and funding; and manages the project throughout the design phase to produce a set of drawings and specifications complete for on-site construction. Prepares and critiques time sequencing schedules, including those generated by computer program, as well as budget cost estimates of the elements of construction in the project. (Required for the project formulation/design, mechanical engineering in-house design, and the infrastructure applications.)

Furnishes expert technical advice based on his/her knowledge of the rudiments of contract law, Federal procurement policies and procedures, and financial management.

Exhibits knowledge of construction contract law, Federal procurement policies and procedures, and financial management.

## **Factor 2 - Supervisory Controls**

Supervision is essentially administrative in nature with assignments made in the form of a designated project for which the scope must be developed, designed, and construction contract administered by the Program Manager. The incumbent plans for and carries out projects with authority to act on own initiative on matters affecting the project's design. Schedule changes, budget changes, and changes or actions that degrade the objective performance or alter operational characteristics of the project are submitted for final sign-off for the supervisor together with recommended courses of action, including available alternatives. The incumbent keeps the supervisor informed of progress on potentially controversial matters identified by an ongoing project analysis or issues with far-reaching implications. Otherwise, actions, decisions, and commitments are considered technically authoritative and are accepted without change. The supervisor, however, is available for consultation on policy matters.

## **Factor 3 - Guidelines**

In addition to standard engineering references, guidelines are broadly stated agency regulations and policy statements. Much of the work involves policy matters or deals with coordination of programs or projects for the design and construction of biomedical research facilities, and Federal budget and procurement policies as they apply to A/E and construction procurement are of primary concern. Personnel policy and regulations are also of routine and necessary concern for the accomplishment of program objectives. The incumbent must exercise considerable judgment and ingenuity in interpreting or adapting guidelines that do exist and developing new approaches when required. Additionally, as a recognized authority, the incumbent must exercise considerable judgment and ingenuity in interpreting existing guidelines and policies and developing new approaches when required. Additionally, as a recognized authority, the incumbent develops instructions, guidelines, and directives for NIH application.

#### **Factor 4 - Complexity**

The assignments are extremely complex, being initially conceptual in nature and at times extending in varied situations into planning, design, scheduling and construction phases. The employee is frequently confronted with novel and obscure problems in planning which require innovative modification of existing methods and creative development of new approaches. Reviews of major building designs performed by private architect/engineer firms must be performed within short time frames, so the employee must use experienced judgment to analyze complex systems quickly and concentrate review efforts on areas of greatest impact. Where significant costs or energy are involved or where poor design would cause serious disruption to the planned research programs. There are often urgent assignments involving public exigency (e.g., rodent swine-flu virus development, AIDS research programs, etc.).

#### **Factor 5 - Scope and Effect**

The purpose of the work is to provide direction and expert technical advice to all major design projects planned for the NIH and its field stations. Projects for which the employee makes decisions are most often valued in the multi million dollar range. Reliability in performance of support systems in medical research facilities and hospitals is of utmost importance; the employee has significant impact on the important medical research efforts carried on by NIH and its field stations and often sets the trend for future construction criteria at these facilities.

#### **Factor 6 - Personal Contacts**

Contacts are with private architect/engineers, engineers with other Federal government agencies and private firms, NIH administrative research personnel, engineers and industrial hygienists with other peer groups at NIH, other DES engineers, contractor and manufacturers' representatives.

#### **Factor 7 - Purpose of Contacts**

Contacts private architect/engineers, to exchange information, coordinate work efforts, furnish technical advice, resolve controversial issues, review drawings, specifications and cost estimates and correct as necessary. Contacts engineers in other agencies and firms to coordinate and develop consistent policies and design approaches. Contacts NIH administrative and research personnel to determine scopes of work. Contacts peer group personnel to solicit advice on safety issues. Contacts other DES engineers (maintenance engineers, construction engineers) to determine mechanical equipment maintenance needs and to resolve field problems that conflict with design. Contacts manufacturer's representatives to obtain information on latest products. The contract is a medium used by the mechanical engineer to act as liaison between the Federal government and contract engineers and to negotiate design modifications.

**Factor 8 - Physical Demands**

The work is usually sedentary and performed in an office environment, although travel to field installations involves a considerable amount of walking, climbing, and other forms of physical exertion associated with program evaluation activities.

**Factor 9 - Work Environment**

Work is normally performed in an office setting with some site visits to the laboratory and animal areas where bio-hazard exposure is common and some visits to mechanical equipment rooms and power plants where exposure to noise, high voltage and moving parts is common.